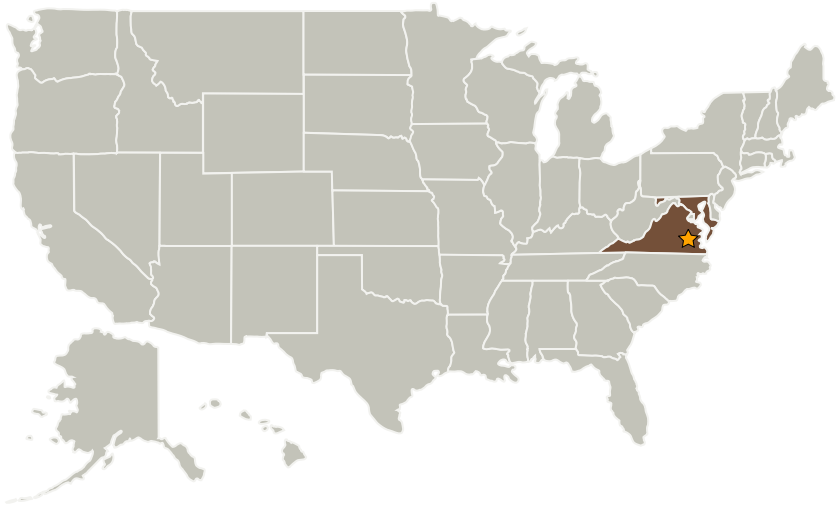
Cognitive Modeling for Closed-Loop Task Mitigation, Phase II

Completed Technology Project (2009 - 2012)

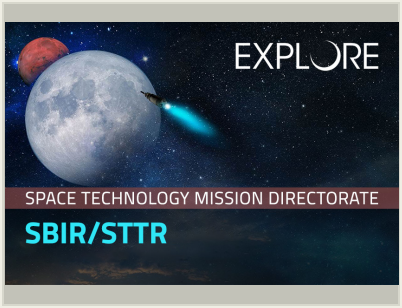
Project Introduction

Intelligent Automation, Inc. (IAI) along with collaborators at the University of Iowa and Old Dominion University (ODU) developed an advanced closed-loop Adaptive Task Management System (ATMS). The ATMS is designed to accurately monitor Operator Functional State (OFS) during flight in real time based on an individualized OFS assessment model. The individualized OFS assessment model is trained and individualized using different sources of training input (physiological signals, system dynamics measurements, etc.) and training output derived from the dynamic cognitive workload reference analysis. If the OFS of an individual decreases below a certain threshold, we will apply a task performance augmentation strategy to even-out workload and maintain the operator in an optimum cognitive workload level. As a result, the operator can be continuously engaged and able to respond quickly and appropriately to unusual situations.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★Langley Research Center(LaRC)	Lead Organization	NASA Center	Hampton, Virginia
Intelligent Automation, Inc.	Supporting Organization	Industry	Rockville, Maryland



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Langley Research Center (LaRC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Primary U.S. Work Locations	
Maryland	Virginia

Project Transitions

December 2009: Project Start

March 2012: Closed out

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX12 Materials, Structures, Mechanical Systems, and Manufacturing
  - TX12.2 Structures
    - TX12.2.3 Reliability and Sustainment